

Title: Discussion: Environmental Effects

Speakers:

Collection: The 24th Capra meeting on Radiation Reaction in General Relativity

Date: June 11, 2021 - 1:15 PM

URL: <http://pirsa.org/21060081>



11 Jun 2021 at 14:14

The vanilla EMRI



- Pure, isolated Kerr
- Pure GR perturbation theory (radiation reaction)
- Secondary is compact
 $C = \frac{M}{R} \sim 1$, 2^{nd} -pole
 $\sim MR^n \sim M^{n+1}$

Flavours other than vanilla

→ Beyond-standard effects [?]
 (non-GR, unknown fields $\leftrightarrow$ super radiance)

→ Nasty secondary *
 (white dwarf, main-sequence*)

→ Environmental effects 
 (accretion disk, external matter perturbation)

QUESTIONS

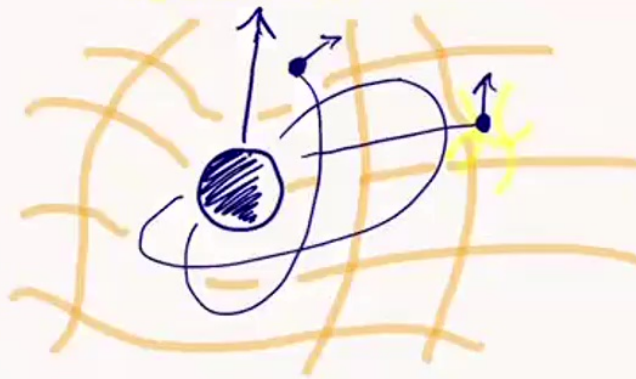
- What are the correlations between



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$$\dot{M} \sim MR^n \sim M^{n+1}$$

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- Beyond-standard effects [?] (non-GR, unknown fields $\leftrightarrow$ super radiance)
- Nasty secondary (white dwarf, main-sequence*)
- Environmental effects (accretion disk, external matter perturbation)

QUESTIONS

- What are the correlations between environmental effects and formation?
 $\hookrightarrow$ e.g. "Wet EMRI" $\leftrightarrow$ hydro drag significant?



environmental effects and formation?

↳ e.g. „Wet EMRI“ $\leftrightarrow$ hydro drag significant?

- How likely is it for a third body to cause resonance? (Door to door, population $\times$ dynamics)
- Tangential: How do we deal with resonances?
 ↳ Catalogize resonant contributors?
 ↳ Should we just assume „something“ without a model?
- What are the astrophysical estimates/bounds on the total external tidal field?
 (e.g. total contribution of star cluster +, dark matter halos, ...)
- BONUS: Are nasty secondaries relevant for LISA? (partial + VDE $\approx$ Hills mass main-sequence)



EMR/3
Should the Capra community also model these?

- Who should care about the Kerr tidal Love number?

Which post-n-adiabatic order?

Which PN order? (EOM, waveform)

- Anything else?

(e.g. total contribution of star cluster +, dark matter halos,...)

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